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centre of whose radius a colossal statue stood, of which the base and one thumb have been found.

Mr. Meader states that it is undoubtedly a " retaining-wall," and in one case calls it semicircular. The plan as given in Fig. 17 is restored on the supposition of a circular structure. The fact is, however, that the wall, as it remains, is about a perfect semicircle directly facing the Agora. There is one small piece of wall, marked *ll* on the plan, which comes on the line which the old wall would have followed had it formed a continuous circle; but this bit of wall, according to the report, is very late, and the bricks and mortar used in it show that it does not belong to the original structure. It may be argued that, though there are now no traces of the continuation of the line of the semicircle, the other half of the supposed circle might at some time have been completely obliterated. A strong argument, however, against this, is the fact that at one end of the semicircle the wall stops without any sign of a break and is joined at an angle to a bit of contemporary wall which extends but a short distance when it is swallowed up in a little Byzantine church. The finish of the masonry at this point appears to exclude the coming in of another part of the segment of the circle. To sum up, there is no fact brought out in the Report which does not favor my hypothesis that we have in this structure the retaining-wall and base of the colossal statue of Demos. Of course this is of importance in the determination of the topography of Sparta.

N. E. CROSBY.

A PRIMITIVE DOME WITH PENDENTIVES AT VETULONIA.

I wish to call the attention of students of the history of architectural forms to the domical structure discovered by Cav. Falchi at Vetulonia, in the artificial tumulus called *La Pietrera*. A full account of the circumstances of its discovery, of the character and contents of the mound, and of the connection with surrounding examples and classes of tombs has been already given in Vol. VIII, No. 4, of this JOURNAL (pp. 620–29), as well as in this number, in the *News*. I will refer, therefore, for details, to these reports, which are condensed from Cav. Falchi's account in the *Notizie degli Scavi.*

The general features and arrangement of this hypogeum or domical tomb are analogous to a number of the Mycenæan funerary structures of the same kind. That is to say, it is built in the midst of an artificial mound, is reached by a long passage-way, has secondary chambers connected with it and is surmounted by a dome constructed of horizontal overhanging courses of stone converging toward a central point and without a true domical construction of wedge-shaped courses.

The fundamental difference between these structures,—of which so many exist in Greece, and a few in Italy,—and this at Vetulonia, is that in the former the circular domical structure begins from the foundations, whereas at Vetulonia the ground-plan is square. A secondary difference is that in Greece the slant of the circular walls begins at once, whereas at Vetulonia the square walls are exactly vertical, until they reach the base of the dome, and this dome is not as acutely pointed as those in Greece.

In neither case have we a true dome, but in the Greek Mycenæan structure we have the prototype of the Pantheon, while at Vetulonia we have a forerunner of the Byzantine domes on pedentives—a far more advanced type.

I have spoken of one structure, but in reality there were two chambers—one built over the ruins of the other. They are of equal dimensions and constructive form, so far as can be judged. The first chamber was built of *Sassoforte* granite which was not able to resist the pressure of the superincumbent earth and its dome fell in not long after construction: this is Cav. Falchi's opinion. On its strengthened walls the second chamber was built with slabs of *Sassovivo* stone with regularity and exactness and without the use of cement. This higher construction led to the raising and enlarging of the mound. Its vault had been partly demolished at some time in order to use its stones. The chamber is a square, measuring five metres, and the transition to the dome was managed by pedentives in the four corners which pass gradually from the square to the circular plan until they form a perfectly circular drum upon which the vault rests. Up to this point—a height of 3.70 metres—the walls are perfectly vertical. The large slabs of stone have a mean thickness of 20 cent.[1]

Just outside of the chamber, on either side of the corridor 14 met. in length, which leads to the outer edge of the artificial mound, is a smaller chamber. They both measure 2.40 met. in height, 1.90 met. in width and 3.10 met. in depth, and are covered with small domes, adjusted to the ground-plan in the same way as the main chamber.

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[1] There is one point that at first seems to remain doubtful in Cav. Falchi's report, and that is one of extreme importance, namely: were there wedge-shaped stones used in the domes of either the first or second chambers, or were they, like the Mycenæan domes, constructed in strictly horizontal courses? The latter method was certainly the one employed. Cav. Falchi mentions wedge-shaped stones fallen from the earlier dome, but what he refers to is apparently the shape given by the diagonal cutting of the edges and the greater narrowness toward the face.

The ground-plan of the mound and chamber given in fig. 1 is taken from the *Notizie degli Scavi.*

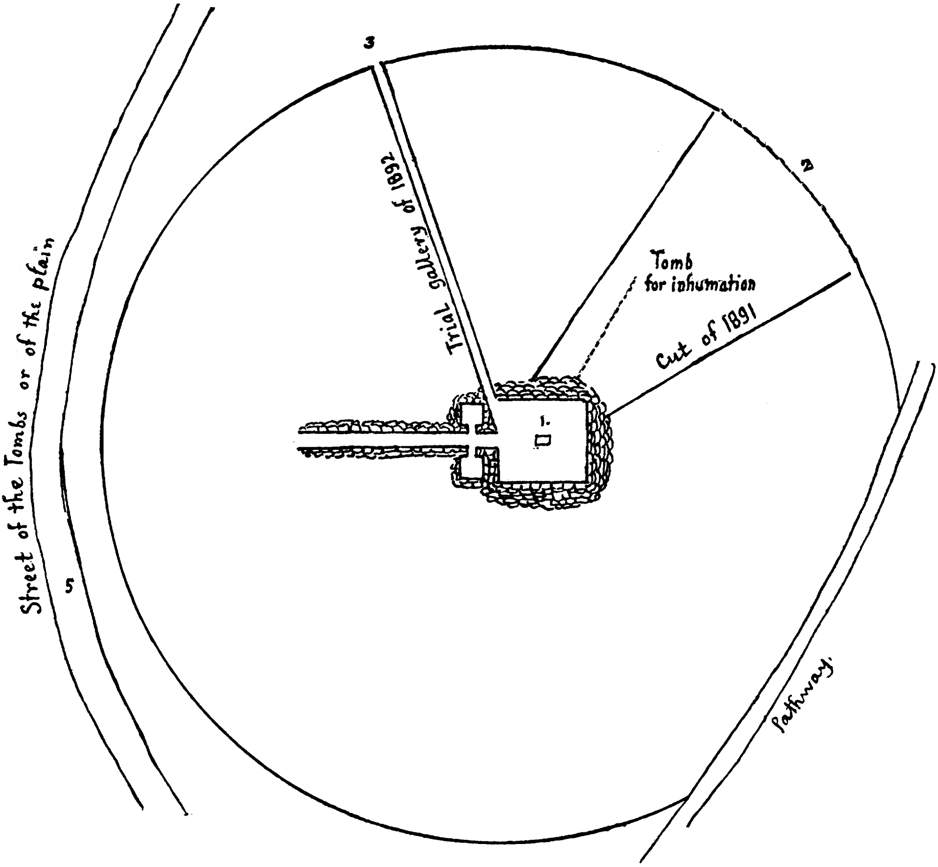

Fig. 1.—Mound of La Pietrera at Vetulonia.

It is generally agreed that the circular form is more ancient in Greece than the square or rectangular form of the sepulchral chamber. At the same time, there are many rock-cut tombs of the Mycenæan period in Greece with rectangular chambers. The Etruscans employed the rectangular chamber from the beginning. It seems as if the few exceptions to this rule were due to Oriental influence: such is the chamber at Quinto Fiorentino, which Helbig places before the close of the sixth century—how much before he does not say. The hypogeum at Vetulonia is certainly as early as the seventh century B. C. and it may be earlier. It is, therefore, about contemporary with such late Mycenæan domical tombs as that of Vaphio.

The question arises: what is the reason for the combination of the dome and the square plan in this instance. Practically speaking the dome imposed itself under the circumstances, for it was the only form of covering that could successfully withstand the pressure of the immense mass of superimposed earth. But for what reason was the dome attached to a rectangular chamber. Why was this additional risk run, why this added labor undergone? It was certainly an unnatural step to take. All tradition was in favor of the circular form. The incomers from the Orient—for such they must have been—settling among the natives, whose well-tombs at Vetulonia show a far inferior degree of culture, could hardly have been much influenced by this lower form of civilization. In fact the funerary deposits that are found in stone circles with central tombs at Vetulonia,—of which this one of the *Pietrera* is the largest, are, according to Cav. Falchi, unmixed foreign deposits, without a single Italic object.

There are two hypotheses to account for this use of the square plan. [I] The ancient Italian tomb-chamber was rectangular and the new comers on settling in Italy came under the spell of certain religious ideas connected with this form and therefore adopted it. [II] Or a more probable hypothesis is that the adoption of the square ground-plan had an earlier origin, outside of Italy, in the Orient.

It is possible that when we know more of the history of the dome in the ancient Orient and also more about this mysterious people in Italy, we shall be able to connect the hypogeum at Vetulonia with the square halls in the Assyrian palaces surmounted by domes probably built on a more scientific plan than that of Vetulonia.

However we may attempt to explain it, the fact remains that it is a unique monument and deserves to be very carefully studied and measured. We hope that Cav. Falchi will publish it shortly in every detail, and until this is done it would be useless to indulge in further speculation.

A. L. Frothingham, Jr.